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Review Article

The Impact and Implications of Alcohol Consumption during Pregnancy: A Comprehensive Review

Uyok Hanson

MPH, Texas A&M University Orcid id: 0009-0008-5879-4989

ABSTRACT:

Alcohol use and abuse remain pressing public health issues, with significant global repercussions. As pointed out by Iranpour and Nakhaee (2019), alcohol consumption is associated with over 200 diseases, putting countless individuals at risk. Certain demographic groups exhibit a heightened susceptibility to the adverse effects of alcohol. Consumption patterns often diverge based on variables such as gender, race, and ethnicity. For instance, men tend to consume more alcohol than women. However, women in developed nations drink more than those in developing countries (Sudhinaraset et al., 2016). Distinctively, consumption rates are notably high among young Hispanic and African American individuals, with particular patterns of dependence observed among Asian men and Black women. A salient concern in this context is the consumption of alcohol by pregnant women. "Data & Statistics" (2016) reveals that 14% of expecting mothers admit to drinking. This behavior can lead to severe health implications for the unborn child, including conditions like fetal alcohol syndrome (FAS) – the gravest health consequence of alcohol consumption during gestation (Hankin et al., 2000). Recent statistics from the CDC indicate that for every 1,000 infants, 0.2 to 1.5 are diagnosed with FAS ("Data & Statistics", 2016). Given the earlier observation that certain demographics consume alcohol more than others, it stands to reason that some populations might be disproportionately affected by FAS. This potential disparity underscores the importance of targeted public health interventions.

Key Words: Alcohol-related harm, pregnancy and alcohol consumption, alcoholism, prenatal alcohol exposure.

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Corresponding author: Uyok Hanson. MPH, Texas A&M University Orcid id: 0009-0008-5879-4989

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INTRODUCTION

Excessive alcohol consumption stands as a predominant, preventable cause of mortality in the US¹. Definitions vary: binge drinking is characterized by the intake of four (for women) or five (for men) drinks during a single occasion, while heavy drinking entails eight drinks per week for women and fifteen for men¹. Additionally, any alcohol use by those under 21 or pregnant women falls under this category. The global burden of disease feels the significant impact of alcohol consumption, identified as a robust risk factor for various conditions, disabilities, and mortality². This includes ailments ranging from infectious diseases, neuropsychiatric disorders (encompassing alcohol use disorders), to unintentional injuries and social harm which exacerbates the economic toll of alcohol consumption³. For certain individuals, even moderate alcohol consumption can be detrimental⁴. The risks span heart disease, certain

cancers, cognitive impairments, social issues, alcohol use disorders, and more. Furthermore, alcohol is recognized as a teratogen, having adverse effects on fetal development⁵. Consuming alcohol during pregnancy adversely influences fetal development, potentially leading to fetal alcohol spectrum disorders (FASDs)⁶. Such exposure stands as a significant cause of mental delays, with lifelong ramifications including neurodevelopmental deficiencies, facial dysmorphologies, and central nervous system dysfunctions - collectively termed Fetal Alcohol Syndrome (FAS)⁷. FAS, correlated with maternal alcohol consumption, manifests symptoms from the fetal stage to early childhood. The spectrum of this disorder encompasses various diagnostic categories: FAS, PFAS, ARND, ARBD, and ND-PAE⁸.

MATERIALS AND METHODS

Our inclusion criteria encompass articles that offer quantifiable data regarding risk, emphasizing a focus on longitudinal studies and systematic reviews. We seek to include research that covers a broad spectrum of populations, including men, women, children, adolescents, and the elderly, to ensure a comprehensive analysis of risk factors.

Conversely, our exclusion criteria involve the omission of non-English articles, as language uniformity is essential for our analysis. Additionally, we exclude studies that are more than 15 years old from the current date, as we aim to prioritize the most recent and relevant information. Lastly, research involving non-human subjects is excluded from our review to maintain a human-centric focus in our analysis.

From our extensive search, we identified an initial set of 40 studies fitting the criteria. However, to ensure a sharper focus on our primary subject - the effects of alcohol consumption on pregnant women and children diagnosed with Fetal Alcohol Syndrome - we refined our dataset. This process led to the exclusion of 15 studies, leaving 25 that were most pertinent to our research goals.

To systematically understand and categorize the data, we employed the Fishbone Diagram as our conceptual model. This model guided the presentation of our problem statement, pinpointing the causes and risk factors associated with prenatal alcohol exposure. We further classified contributing factors into various domains: internal and external factors, and those rooted in psychological, biological, social, and environmental paradigms. This framework allowed for an in-depth exploration of the multifaceted causes tied to alcohol consumption during pregnancy.

RESULTS

The CDC outlines potential consequences for children with FASDs: from growth issues, cognitive delays, and hyperactivity to long-term challenges like mental illnesses and delinquent behaviors¹. Data suggests that FASDs' prevalence is global and varies across subtypes¹:

FAS: 0.5 to 7 per 1000 births

PFAS: 0.8 to 43.01 per 1000.

ARND: 0.12 to 20.25 per 1000.

ARBD: 1.03 to 10.82 per 1000.

FASD: 1.06 to 113.22 per 1000.

Children with ND-PAE showcase challenges spanning thinking, memory, behavioral problems, and difficulties in daily activities. Given the intricate scope of neurodevelopment, the range of potential outcomes is vast.

To diagnose a child with FAS, a criteria is established¹:

- Growth and neurodevelopmental deficiencies.
- Cognitive or behavioral impairments, sometimes inclusive of ADHD.
- At least two specific facial features.

- Evidence of prenatal alcohol exposure.

Despite these criteria, many affected individuals manifest significant behavioral and cognitive challenges impacting their daily living¹. There remains an absence of remedies to reverse FAS or the damage inflicted on the fetal central nervous system. FAS isn't genetic, underscoring the importance of early interventions in pregnancies where alcohol abuse is present to mitigate FAS severity¹. On Alcohol Abuse and African American Communities exhibit particular vulnerability to alcohol use and abuse. Sudhinaraset et al. (2016) highlighted the targeting of these communities by alcohol advertisements. This is underscored by the fact that, while making up only 13% of the U.S. population, they account for a staggering 69% of malt liquor sales nationwide. A myriad of risk factors further compound this issue, including marital status, socioeconomic standing, age, smoking habits, and previous drinking patterns [22]. Discrimination and associated stigmatization have also emerged as significant predictors of alcohol abuse, with many using alcohol as a coping mechanism. Utilizing the social cognition model may offer insights into more adaptable risk factors. This model also presents a means to pinpoint women in need of additional support to curtail their alcohol consumption. The theory of planned behavior serves as a reliable model for predicting drinking habits, even outside of pregnancy.

Interventions in Fetal Alcohol Spectrum Disorder (FASD)

Evidence-backed interventions have been found to enhance neurodevelopmental outcomes in infants and children. Specific studies [23][24] have centered on aiding mothers in fostering an environment conducive to their infants' growth. One study [24] reported average developmental test scores for children with prenatal alcohol exposure (PAE) after home visits. This suggests the effectiveness of intensive early interventions. However, a study with a more robust design [23] found no tangible effects of the home visits, with children still scoring below age-expected standards.

On the subject of self-regulation and attentional control, multiple studies have aimed to bolster cognitive functions in early to middle childhood. Three studies demonstrated the efficacy of ALERT, a program tailored for children with FASDs to hone their executive functions. Although methodologically robust, these studies had relatively small samples and limited follow-up data, but still reported improvements (Nash et al., 2015; Soh et al., 2015; Wells et al., 2012).

DISCUSSION

Gains in attention have also been observed, with some improvements extending to academic skills like math and reading [17]. Vernescu (2008), in an unpublished thesis, reported marked enhancements in auditory and visual sustained attention, along with non-verbal

reasoning tasks. It's paramount to consider comprehensive life support for children diagnosed with FAS, in addition to cultural education. This education should underscore the importance of abstaining from alcohol, especially for women during pre-conception, while engaging in unprotected intercourse, and during pregnancy. Considering the absence of any proven safe minimum alcohol intake during pregnancy, abstinence remains the best policy. Alcohol consumption carries different risks for men and women, with women facing a higher disease risk at the same consumption levels. The dangers of excessive alcohol intake during pregnancy are significant and well-documented, but global guidelines on this issue vary. Numerous intervention programs exist to support families and children affected by Fetal Alcohol Syndrome (FAS), with varying degrees of success. The impact of low to moderate alcohol consumption during pregnancy on the fetus remains inconclusive, highlighting the need for further research. An educational gap persists in preventing alcohol consumption during unplanned pregnancies and correcting societal norms. Surprisingly, many women of childbearing age still consume alcohol, with some holding the belief that moderate consumption doesn't harm fetal health. FAS symptoms often resemble those of ADHD, necessitating more research into their correlation. Alcohol consumption during pregnancy is influenced by various socioeconomic factors, with no single group predominantly affected. However, it's important to note that underreporting is common due to the stigma surrounding prenatal alcohol exposure. The references provided offer insights into multiple facets of alcohol consumption, its impact, and the ongoing efforts to understand and mitigate its adverse effects.

CONCLUSION

Excessive alcohol consumption during pregnancy poses significant and extensively documented risks, yet there is a notable divergence in global guidelines addressing this concern. The existence of numerous intervention programs designed to aid families and children affected by Fetal Alcohol Syndrome (FAS) is evident; however, their efficacy varies.

Moreover, various socioeconomic factors exert influence over alcohol consumption during pregnancy, with no single demographic group being predominantly affected. It is essential to acknowledge the prevalence of underreporting in this context due to the societal stigma associated with prenatal alcohol exposure. The references provided serve as valuable sources of information, shedding light on diverse aspects of alcohol consumption, its consequences, and the ongoing efforts to comprehend and mitigate its adverse effects.

REFERENCES

1. January, 2016 Data & Statistics on fetal alcohol spectrum disorders (FASDs). Centers for Disease

- Control and [Prevention](https://www.cdc.gov/ncbddd/fasd/data.html)<https://www.cdc.gov/ncbddd/fasd/data.html>
- Sudhinaraset, M., Wigglesworth, C., & Takeuchi, D. T. (2016). Social and Cultural Contexts of Alcohol Use: Influences in a Social-Ecological Framework. *Alcohol research: current reviews*, 38(1), 35–45.
 - Mattick, R. P., Clare, P. J., Aiken, A., Wadolowski, M., Hutchinson, D., Najman, J., Slade, T., Bruno, R., McBride, N., Kypri, K., Vogl, L., & Degenhardt, L. (2018). Association of parental supply of alcohol with adolescent drinking, alcohol-related harms, and alcohol use disorder symptoms: a prospective cohort study. *The Lancet. Public health*, 3(2), e64–e71. [https://doi.org/10.1016/S2468-2667\(17\)30240-2](https://doi.org/10.1016/S2468-2667(17)30240-2)
 - Hingson, R., Zha, W., Simons-Morton, B., & White, A. (2016). Alcohol-Induced Blackouts as Predictors of Other Drinking Related Harms Among Emerging Young Adults. *Alcoholism, clinical and experimental research*, 40(4), 776–784. <https://doi.org/10.1111/acer.13010>
 - Iranpour, A., & Nakhaee, N. (2019). A review of alcohol-related harms: a recent update. *Addiction & health*, 11(2), 129.
 - Kraus, L., Seitz, N.-N., Shield, K. D., Gmel, G., & Rehm, J. (2019). Quantifying harms to others due to alcohol consumption in Germany: a register-based study. *BMC Medicine*, 17(1). doi:10.1186/s12916-019-1290-0
 - Keyes, K. M., Jager, J., Mal-Sarkar, T., Patrick, M. E., Rutherford, C., & Hasin, D. (2019). Is There a Recent Epidemic of Women's Drinking? A Critical Review of National Studies. *Alcoholism, clinical and experimental research*, 43(7), 1344–1359. <https://doi.org/10.1111/acer.14082>
 - Rehm, J. (2011). The risks associated with alcohol use and alcoholism. *Alcohol Research & Health*, 34(2), 135.
 - Hankin, J., McCaul, M. E., & Heussner, J. (2000). Pregnant, Alcohol-Abusing Women. *Alcoholism: Clinical and Experimental Research*, 24(8), 1276–1286. <https://doi.org/10.1111/j.1530-0277.2000.tb02094.x>
 - Slade, T., Chapman, C., Swift, W., Keyes, K., Tonks, Z., & Teesson, M. (2016). Birth cohort trends in the global epidemiology of alcohol use and alcohol-related harms in men and women: systematic review and meta-regression. *BMJ open*, 6(10), e011827. <https://doi.org/10.1136/bmjopen-2016-011827>
 - ELIZABETH M. ARMSTRONG, ERNEST L. ABEL. (2000) FETAL ALCOHOL SYNDROME: THE ORIGINS OF A MORAL PANIC, *Alcohol and Alcoholism*, Volume 35, Issue 3, May 2000, Pages 276–282, <https://doi.org/10.1093/alcalc/35.3.276>
 - Mattson, S. N., Crocker, N., & Nguyen, T. T. (2011). Fetal alcohol spectrum disorders: neuropsychological and behavioral features. *Neuropsychology review*, 21(2), 81–101. <https://doi.org/10.1007/s11065-011-9167-9>
 - Muggli E, Matthews H, Penington A, Claes P, O'Leary C, Forster D, Donath S, Anderson PJ, Lewis S, Nagle C, Craig JM, White SM, Elliott EJ, Halliday J. Association Between Prenatal Alcohol Exposure and Craniofacial Shape of Children at 12 Months of Age. *JAMA Pediatr*. 2017 Aug 1;171(8):771-780. doi: 10.1001/jamapediatrics.2017.0778. PMID: 28586842; PMCID: PMC6583660.

14. Bhuvanewar, C. G., Chang, G., Epstein, L. A., & Stern, T. A. (2007). Alcohol use during pregnancy: prevalence and impact. Primary care companion to the Journal of clinical psychiatry, 9(6), 455–460. <https://doi.org/10.4088/pcc.v09n0608>
15. *State-level Estimates of Alcohol Use Among Women – 2019*. (2021, May 14). Centers for Disease Control and Prevention. <https://www.cdc.gov/ncbddd/fasd/data-maps-2019.html>
16. DeVesty, G., Karakashian, A. L., & Armenian American Medical Society of California. (2018). Alcohol Use Disorder and Pregnancy. CINAHL Nursing Guide, ICD-9(June 1,).
17. Coles C. D. (2011). Discriminating the effects of prenatal alcohol exposure from other behavioral and learning disorders. *Alcohol research & health : the journal of the National Institute on Alcohol Abuse and Alcoholism*, 34(1), 42–50.
18. Veloso, L. U. P., & Monteiro, C. F. D. S. (2013). Prevalence and factors associated with alcohol use among pregnant adolescents. *Revista Latino-Americana de Enfermagem*, 21(1), 433–441. <https://doi.org/10.1590/s0104-11692013000100020>
19. Spadoni, A. D., McGee, C. L., Fryer, S. L., & Riley, E. P. (2007). Neuroimaging and fetal alcohol spectrum disorders. *Neuroscience and biobehavioral reviews*, 31(2), 239–245. <https://doi.org/10.1016/j.neubiorev.2006.09.006>
20. Skagerström, J., Chang, G., & Nilsen, P. (2011). Predictors of drinking during pregnancy: a systematic review. *Journal of women's health (2002)*, 20(6), 901–913. <https://doi.org/10.1089/jwh.2010.2216>
21. Keyes, K. M., Jager, J., Mal-Sarkar, T., Patrick, M. E., Rutherford, C., & Hasin, D. (2019). Is There a Recent Epidemic of Women's Drinking? A Critical Review of National Studies. *Alcoholism, clinical and experimental research*, 43(7), 1344–1359. <https://doi.org/10.1111/acer.14082>
22. Ishitsuka, K., Hanada-Yamamoto, K., Mezawa, H., Saito-Abe, M., Konishi, M., & Ohya, Y. (2019). Determinants of Alcohol Consumption in Women Before and After Awareness of Conception. *Maternal and Child Health Journal*, 24(2), 165–176. <https://doi.org/10.1007/s10995-019-02840-2>
23. Clark, M. (2020). Parenting Matters: Supporting Parents of Children Ages 0–8. *Journal of Developmental & Behavioral Pediatrics*, 41(2), 103. <https://doi.org/10.1097/dbp.0000000000000765>
24. Yazdani, S., & Daryei, G. (2016). Parenting styles and psychosocial adjustment of gifted and normal adolescents. *Pacific Science Review B: Humanities and Social Sciences*, 2(3), 100–105. <https://doi.org/10.1016/j.psr.2016.09.019>
25. Barker, A. (2009). Research Review: Sensory Integration. *Perspectives: Journal of the Early Childhood Music & Movement Association*, 4(1), 22–24. <https://doi.org/10.1386/jjmec.0134.5>
26. Reid, N., Dawe, S., Shelton, D., Harnett, P., Warner, J., Armstrong, E., LeGros, K., & O'Callaghan, F. (2015). Systematic Review of Fetal Alcohol Spectrum Disorder Interventions Across the Life Span. *Alcoholism: Clinical and Experimental Research*, 39(12), 2283–2295. <https://doi.org/10.1111/acer.12903>
27. Coles C. D. (2011). Discriminating the effects of prenatal alcohol exposure from other behavioral and learning disorders. *Alcohol research & health: the journal of the National Institute on Alcohol Abuse and Alcoholism*, 34(1), 42–50.